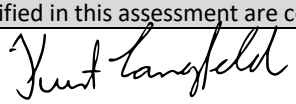
School(s):	**SCAPE**	**Group/PI:**	**Onno Bokhove**
Risk Assessment Title:	**Moving & Setup of Wetropolis flood demonstrator**	**Assessment No:**	**Wetropolis-1**
Location of Activity:	**SCAPE reception area**	**Name of Assessor:**	**Onno Bokhove/Mark Trigg**
Details of Activity:	**The Wetropolis Flood Demonstrator is used to demonstrate flood process to the general public. There are 3 main components: (i) a tabletop water flood channel demonstrator box, (ii) an upright marble cascade, and (iii) an electronic control box. The table top box (1.5 x 1.5m x 0.3m) sits on two sturdy portable support legs. A small flow of water is pumped around a channel in the top of the demonstrator box by a submersible pump placed in a reservoir (sump) situated under the demonstrator (water capacity ~15 litres). The enclosed marble cascade simulates rainfall and is the trigger for the pumping. Both pump and cascade are controlled by the electronics in the separate control box. The marble cascade and control box are located on a table away from the main demonstrator, but connected by wires. The electronics control box is sealed from water splashes/drips and connected to the mains via an RCD. The whole demonstrator is designed to be easily portable and each of its separate components is less than 25kg and require only one person to handle. A trained person stands with the demonstrator while it is operating and explains to visitors the details (as well as makes sure everything is operating correctly). Wetropilis will be moved from its current location (Chemistry B13) to the SCAPE reception area for one day on Wed the 7th of Septmber 2022.** **For more info, images and videos see links: https://github.com/obokhove/wetropolis20162020** **https://github.com/obokhove/wetropolis20162020/tree/master/feedback**		
Other assessments or documents which might also be required, X if needed:			
Manual Handling ☐ **COSHH** ☐ **Noise** ☐ **Other (please specify)**			

Signature of Assessor	
Signature: Onno Bokhove/Mark Trigg	**Date:** 29/8/2022
Signature of Manager(s) "The risks identified in this assessment are controlled so far as is reasonably practicable"	
Signature: 	**Date:** 30/8/2022

Date of Reassessment (Every two years minimum)	Are There Any Changes To The Activity Since The Last Assessment?	Signature of Manager

Name of Person Undertaking the Activity	School	Role	Signature	Date

LIKELIHOOD (L)	
5	Inevitable
4	Highly Likely
3	Possible
2	Unlikely
1	Remote Possibility

SEVERITY (S)	
5	Very High –Death or permanent disability
4	High – Serious injury (hospital admission)
3	Moderate - RIDDOR over 7 days
2	Slight - First Aid treatment
1	Nil - Very Minor

RISK RATING	ACTION
1 – 4	Broadly Acceptable - No action required
5 – 9	Moderate - Reduce risks if reasonably practicable
10 – 15	High Risk - Priority Action to be undertaken
16 – 25	**Unacceptable - Action must be taken IMMEDIATELY**

RISK RATING = LIKELIHOOD X SEVERITY						
SEVERITY (S)	**5**	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	**2**	**3**	**4**	**5**
		LIKELIHOOD (L)				

PROCESS / ACTIVITY NO.	HAZARD e.g. Falling Objects, Fire, Explosion, Noise, Violence etc.	PERSONS AT RISK e.g. Employees, Contractors, Members of the public	POSSIBLE OUTCOME	RISK RATING WITHOUT CONTROLS (LXS)	CONTROL MEASURES e.g. Guards, Safe Systems of Work, Training, Instruction, Authorised Users, Competent Persons, Personal Protective Equipment (PPE)	RISK RATING WITH CONTROLS (LXS)	FURTHER ACTION REQUIRED? Yes/No
1	Electricity	All	Electrocution resulting in death.	3x5=15	- Using water safe rated pond pump. - All electrical components kept above Wetropolis level and on a separate table to avoid electricity and water coming into contact in case of a leak. - Waterproof cabling taped in place to control positions. - Table and demonstrator to be kept close enough together that one cannot attempt to walk through the region in between, risking the damaging of the equipment and cabling. - Any extension leads are off the ground - 16V electronics and pump. - PAT testing/visual inspection required and uptodate - electronics connected to mains via Residual Current Device. SCAPE location allows table and socket away 3m away from water channel.	1x5=5	No

1	Miss use of pumps. Pond pumps burning out when not under water	All	Fire/Burning/Electrocution	3x2=6	- The pumps have in-built safety features; they will stop if out of water. - Ensure that the pump is fully under water to depth in the water sump. - System only to be operated when tranied user is at the table. - The sump is fixed in place to the equipment to ensure it cannot fall or be kicked over. - Ability to turn off quickly if required - IP46 to IP47 rate pumps (they are pond pumps)	2x2=4	No
1	Slipping from spilled water	All	Fall injury	2x2=4	-Wipe up spilled water immediately; paper towels and a mop available at all times. - sump is fixed to table and cannot be tipped over, so if water spills it will be small quantities	2x1=2	No
1	Tripping over wires between table and electronics	All	Fall injury	2x2=4	Conference participants will be segregated from cables. The wire location will be blocked by the transport boxes to stop people walking over the cables. Cable will also be elevated at table level above tripping level.	2x1=2	No
1	Poor water hygiene	All	Illness through dirty equipment	2x2=2	If the equipment is not to be used for a while, i.e. more than 24-36hrs, then it should be emptied and left dry (from a legionnaire's perspective). Note emptying is normal practice as any biological / biofilm growth will affect the water viscosity as well as surface friction altering the flood demonstartor behaviour. and from a growth-viscosity perspective).	1x1=1	No

2	Manual handling during packup from Chemistry	Mainly Operators	Falling items, trapped fingers, cuts etc.	3x3=9	All individuals involved in carrying the equipment have carried out the manual handling training on BritSafe. Equipment is stored dry (i.e. no water issues). Components are placed in carry cases and table top has built in box on outside. Components are light weigth (<25 kg) and portable by one person. Any sharp edge have been removed in manufacture as equipment is public facing. Training is necessary for operators to handle correctly so equipment is not damaged.	1x3=3	No
3	Manual handling during transport	Mainly Operators	Falling items, trapped fingers, cuts etc. plus trips and falls.	3x3=9	All individuals involved in carrying the equipment have carried out the manual handling training on BritSafe. Equipment is transported dry (i.e. no water issues). Components are light weigth (<25 kg) and portable by one person. Two people to transport to ensure routes are clear and make sure no damage occurs to equipment (not for manual handling reasons). Route: carry short distance (20 m) to external door near Chemistry B13 with safe/easy car access, drive around to front of SCAPE building and carry short distance (30 m) up ramp to reception door. Transport route minimises stairs (a couple of steps) and carrying (most of the distance is via car).	1x3=3	No

4	Manual handling during setup	Mainly Operators	Falling items, trapped fingers, cuts, water handling	3x3=9	All individuals involved in carrying the equipment have carried out the manual handling training on BritSafe. Equipment requires unboxing and setting up on tables. Ensure disabled access door is not blocked and grey fire door can be accessed easily if needed. Training is required to ensure equipment is not damaged. During setup ensure cables are taped in safe positions and public access over/through cableway is not possible using transport boxes stored in this location. Once equipment is setup, check everything is correctly connected and ready. Add water in stages using bucket from nearby water source (nearby bathrooms). Do not add more water than clearly labelled full line. Check for any leaks and address these before proceeding. Switch equipment on and after a while check for leaks again. All should now be operating correctly.	1x3=3	No

5	Manual handling during packup	Mainly Operators	Falling items, trapped fingers, cuts, water handling	3x3=9	All individuals involved in carrying the equipment have carried out the manual handling training on BritSafe. Equipment is left for 30 minutes after operating to drain all water fully into sump. Equipment requires most of the water draining into 10 litre bucket and emptying in building waste water drainage (nearby bathrooms). This is carried out in ~3 buckets by volume. Finally sump is removed and final water emptied. Any damp parts of equipemtn are dried with paper towel to ensure fully dry for transport and storage. Equipment is boxed up ready for transport.	1x3=3	No

ACTION If further action has been identified above, describe what needs to be done, by whom with agreed timescales for completion			
Description	**Who**	**Target Date**	**Completed On**

COMMENTS AND INFORMATION Use this section to record any additional information, comments, dynamic risk assessment comments etc.
Additional Wetropolis operators during event. I have read the risk and understood the risk assessment: Andy Carr, Ben Maybee, Zhe Zhan

Process / Activity Log

PROCESS / ACTIVITY	PROTOCOL REF. NO. e.g. SOP, COSHH, OOH/LONE WORKING
1. Operation	
2. Pack up from Chemistry	
3. Transport	
4. Set up in SCAPE	
5. Final Packup	
6.	
7.	
8.	
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11.	
12.	
13.	
14.	
15.	